

# Capital Budget

The six-year capital budget covers the period 2010 through 2015 and includes the purchase of capital equipment and the capital improvement program (CIP). The CIP focuses on replacing and refurbishing existing infrastructure and the construction of additional infrastructure to meet CAWCD needs. The CAWCD Board of Directors is asked to approve capital expenditures for 2010 and 2011. Equipment and projects shown after 2011 are for advisory purposes to inform the CAWCD Board and constituents of potential future capital budget requirements.

This document includes:

- A description of the capital budget process and the role of the Project Steering Committee (PSC).
- A summary of capital equipment and CIP projects.
- A description of each CIP project, justification, total project cost, and the strategic issue and key result area that the project will support.

## Capital Budget Process

### Capital Equipment

District cost centers identify specific capital equipment needs for the 2010 and 2011 budget. Included with their request is a business rationale to justify the equipment purchase and a review of alternatives to acquiring the item. For equipment that exceeds \$100,000, a business justification analysis is performed and a recommendation provided to the PSC for inclusion in the budget. For the fleet vehicle budget, a separate analysis is performed to determine if vehicles are being utilized as intended by CAWCD's fleet vehicle policy and to ensure that additional or replacement vehicles are required. The guidelines established by this policy address the acquisition, assignment, pooling, replacement, and disposal of fleet vehicles.

For equipment shown during the 2012 through 2015 planning period, CAWCD utilizes the long-range financial plan (LRFP) to identify potential capital equipment that may require funding during the planning horizon. The LRFP is developed by the Financial Planning and Analysis Department in conjunction with other key staff within CAWCD.

## Capital Improvement Program (CIP)

The capital improvement program (CIP) must support the District's strategic plan and be tied to a key results area (KRA) and a strategic issue within that KRA. For 2010 and 2011, the projects associated with each KRA are summarized as follows:

**Water Supply**—This KRA deals with improving Colorado River reliability, developing new water supplies and protecting Colorado River water rights.

<b>Strategic Issue</b> <i>(In Thousands)</i>	<b>Total Project Cost</b>	<b>Pre-2010</b>	<b>2010</b>	<b>2011</b>	<b>Balance</b>
<b>Develop New Water Supplies</b>					
Recharge Improvement –Pima Mine Road	3,355.0	9.9	491.3	2,227.4	626.4
Superstition Mountains Recharge Project	11,932.0	2,856.9	3,559.4	5,515.7	
					4382.6
Effluent Pipeline-Lower Santa Cruz Recharge Project	5614.8	20.6	151.4	1060.2	
			<u>\$ 4,202.1</u>	<u>\$ 8,803.3</u>	

**Electrical Power**—This KRA deals with effective use of CAP power resources and preparedness for a new power environment after 2011, when current power contracts will expire.

<b>Strategic Issue</b> <i>(In Thousands)</i>	<b>Total Cost</b>	<b>Pre-2010</b>	<b>2010</b>	<b>2011</b>	<b>Balance</b>
<b>Effectively Manage Power Resources</b>					
Power Meters –Brady, Picacho, Red Rock	\$ 1,933.2	\$ 24.1	\$ 442.0	\$ 1,467.1	
Southwest Transmission	9,420.8	2,006.7	7,034.8	379.3	
			<u>\$ 7,476.8</u>	<u>\$ 1,846.4</u>	

**Project Reliability**—This KRA deals with managing CAWCD's workforce, effectively operating and maintaining the CAP system, and preparedness for business disasters and threats. Projects that are included in this KRA are shown on page 5-3.

Strategic Issue (In Thousands)	Total Cost	Pre-2010	2010	2011	Balance
<b>Provide a Healthy, Safe and Secure Workplace</b>					
GIS underground utilities	\$ 634.9	\$ 630.3	\$ 4.6	-	-
Pumping plant fire protection	11,641.4	4,757.7	-	2,557.2	<u>4,326.5</u>
			4.6	2,557.2	
<b>Effectively Operate &amp; Maintain the System</b>					
As-built pumping plants phase II	18,200.7	13,504.9	1,947.3	1,981.2	767.3
Breaker replacement Mark Wilmer Pumping Plant	240.0	-	240.0	-	-
Business continuous update	977.7	-	975.8	1.9	-
Chillers	12,997.2	2,913.7	3,755.8	2,510.7	3,817.0
Communication cable replacement	33,871.0	3,129.3	4,786.6	4,533.5	21,421.6
Database –Resource Planning & Analysis	140.0	-	70.0	70.0	-
Enterprise financial planning	550.0	-	390.0	160.0	-
ERP hardware upgrade	840.0	-	840.0	-	-
Geomation replacement	549.2	150.1	399.1	-	-
Potable water—pumping plants	5,822.6	2,395.8	2,499.4	927.4	-
Projects under \$200,000	1,597.4	597.4	500.0	500.0	-
Remote terminal units (RTU)	9,174.6	7,466.2	1,708.4	-	-
SCADA replacement	3,680.7	61.4	1,934.3	1,685.0	-
Trashrakes	14,401.6	4,217.5	1,704.7	2,434.4	6045.0
Urban fencing - Phase I	882.3	382.1	500.2	-	-
Urban fencing - Phase II	592.2	208.5	194.8	188.9	-
Water treatment - Salt Gila Pumping Plant	1,168.2	176.3	206.3	785.6	-
Welding & paint shop maintenance	567.1	562.3	4.8	-	-
Wide area network (checks & turnouts)	961.7	682.5	279.2	-	-
				\$	
			\$22,936.70	15,778.60	
<b>Total Project Reliability</b>			<b>\$22,941.30</b>	<b>\$18,335.80</b>	

## 2010/2011 Advisory Projects

The following projects are being evaluated; however, they have not progressed enough for a planning document to be prepared for approval by the PSC. Based on proper justification, these projects may be approved and implemented out-of-budget.

- Condition-based monitoring
- Headquarters / pumping plant parking lot paving
- LMS replacement
- Transmission separation
- Voice over Internet Protocol (VoIP)

## Biennial Budgeting

In the event a new capital spending requirement develops in the off budget year, it can proceed only if the PSC process is followed and is within the Board approved capital budget limit. If the new project will cause the General Manager to exceed the spending authority approved by the Board, then Board approval is required.

# Project Steering Committee Process

The PSC review and approval process consists of four phases: Concept, Assessment, Planning and Implementation. Each phase of the process entails the development of certain project information, including (1) analysis of alternatives, (2) justification, (3) cost and schedule, and (4) anticipated savings, if applicable, and impacts on ongoing operating expenses. Once approved by the PSC, the project is then presented to the District's Senior Management Team and, if approved, can be included in the budget.

For a project to be approved by the PSC, it must support the District's strategic plan. In addition, it must have sufficient business rationale and merit. Compelling reasons or drivers for proceeding with a CIP project include having an adequate return on investment, health and safety issues, system reliability, capacity requirements, maintenance engineering strategies, etc.

## PSC Objectives

- Provide overall project governance
- Ensure consistency with CAP's business strategies and system architecture
- Evaluate proposed projects, review possible alternatives, and approve or deny the project
- Authorize performing work out-of-budget or delaying work until the next budget cycle
- Maintain a current list of proposed and approved projects (Official Project List)
- Monitor and provide oversight and feedback to the project team or PMO for these projects
- Prioritize PSC projects and other projects, as necessary, with advice from the Project Management Offices and subject matter experts



# Funding & Expenditures

## Funding

The District funds the capital budget on a pay-as-you-go basis from a "Big R" (major repair and replacement) rate component, which is included in the fixed OM&R water rate. With fixed OM&R partially subsidized for some classes of water customers, the balance of capital expenditures is funded from general property taxes. Significant changes in annual capital expenditures may temporarily impact CAWCD discretionary reserves. The District's strategy for reserve targets anticipates fluctuation in annual operating and capital expenditures and also maintains a cushion in the event of extraordinary emergency repairs.

## Budget

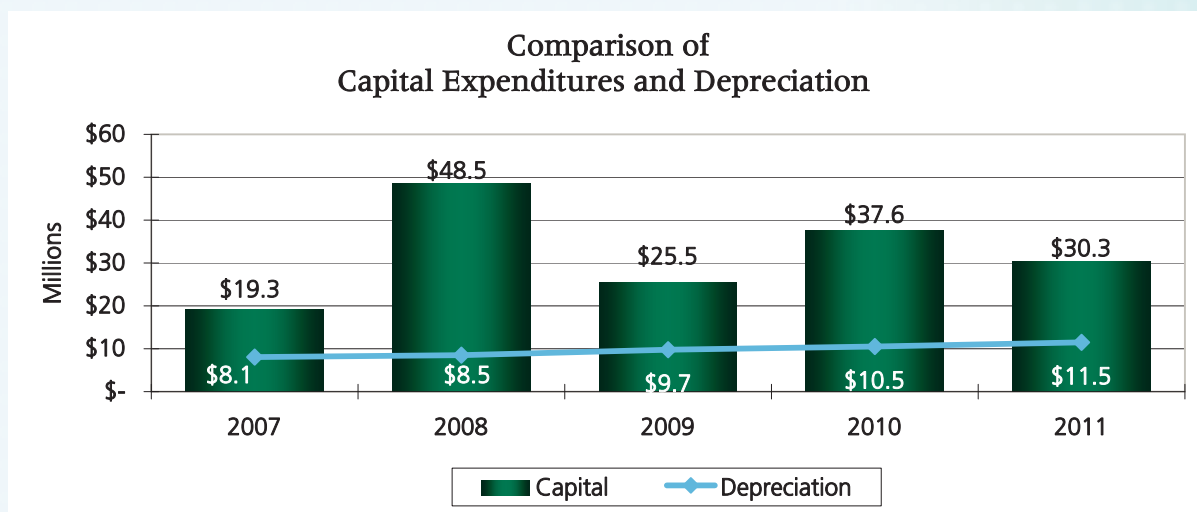
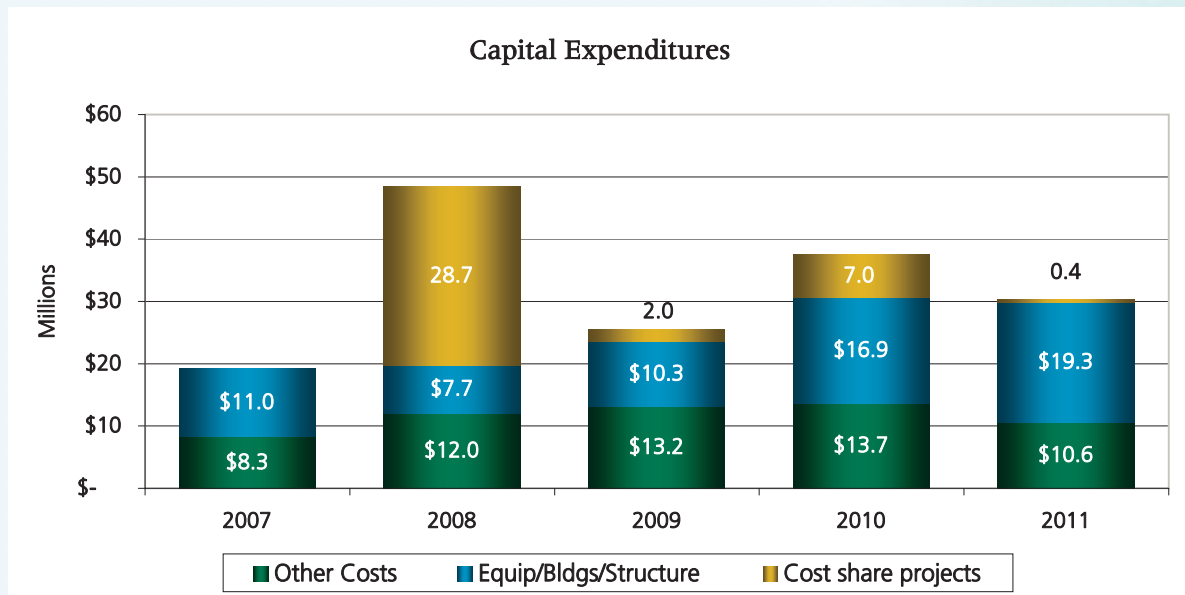
Total expenditures for 2010 and 2011 are shown on page 5-7. Details on specific capital equipment and projects are included on pages 5-8 to 5-10.

<i>(Millions)</i>	2010	2011
Capital Improvement Program	\$ 34.6	\$ 29.0
Capital Equipment	3.0	1.3
	<u>\$ 37.6</u>	<u>\$ 30.3</u>

# Capital Budget

(In Thousands)

	2007 Actuals	2008 Actuals	2009 Projected	2010 Budget	2011 Budget
<b>Expenditures</b>					
Salaries and related costs	\$ (3,010.4)	\$ (3,404.1)	\$ (5,102.4)	\$ (4,443.5)	\$ (3,781.0)
Equipment, buildings, and structures	(11,000.8)	(36,422.6)	(12,342.7)	(23,947.1)	(19,674.6)
Other expenses					
Outside services	(2,359.2)	(4,698.1)	(2,562.6)	(3,445.8)	(2,508.9)
Materials and supplies	(58.1)	(440.1)	(422.6)	(568.4)	(10.8)
Other expenses	(2,830.6)	(3,497.0)	(5,072.3)	(5,195.7)	(4,289.1)
Subtotal	(5,247.9)	(8,635.2)	(8,057.5)	(9,209.9)	(6,808.8)
Total capital	\$ (19,259.1)	\$ (48,461.9)	\$ (25,502.6)	\$ (37,600.5)	\$ (30,264.4)



# Capital Budget - Detail

(In Thousands)

	See Page	Total Project Cost	Pre-2010	2010	2011
<b>Capital Improvement Program</b>					
As-built pumping plants phase 2	5-11	18,200.7	13,504.9	1,947.3	1,981.2
Breaker replacement (Mark Wilmer PP)	5-12	240.0	-	240.0	-
Business continuous update	5-13	977.7	-	975.8	1.9
Chillers	5-14	12,997.2	2,913.7	3,755.8	2,510.7
Communication cable replacement	5-15	33,871.0	3,129.3	4,786.6	4,533.5
Database (Resource, Planning & Analysis)	5-16	140.0	-	70.0	70.0
Effluent Pipeline (Lower Santa Cruz)	5-18	5,614.8	20.6	151.4	1,060.2
Enterprise financial planning	5-19	550.0	-	390.0	160.0
ERP hardware upgrade	5-20	840.0	-	840.0	-
Geomation replacement	5-21	549.2	150.1	399.1	-
GIS underground utilities	5-22	634.9	630.3	4.6	-
Potable water to the pumping plants	5-24	5,822.6	2,395.8	2,499.4	927.4
Power meters (Brady, Picacho, Red Rock)	5-25	1,933.2	24.1	442.0	1,467.1
Projects under \$200,000	5-26	1,597.4	597.4	500.0	500.0
Pumping plant fire protection	5-27	11,641.4	4,757.7	-	2,557.2
Recharge improvement (Pima Mine Road)	5-28	3,355.0	9.9	491.3	2,227.4
Remote terminal units (RTU)	5-29	9,174.6	7,466.2	1,708.4	-
SCADA replacement	5-31	3,680.7	61.4	1,934.3	1,685.0
Southwest transmission	5-33	9,420.8	2,006.7	7,034.8	379.3
Superstition Mountains Recharge Project	5-35	11,932.0	2,856.9	3,559.4	5,515.7
Trashrakes	5-36	14,401.6	4,217.5	1,704.7	2,434.4
Urban fencing - Phase I	5-37	882.3	382.1	500.2	-
Urban fencing - Phase II	5-38	592.2	208.5	194.8	188.9
Water treatment (Salt Gila Pumping Plant)	5-39	1,168.2	176.3	206.3	785.6
Weld paint shop modification	5-40	567.1	562.3	4.8	-
Wide area network (Checks & Turnouts)	5-43	961.7	682.5	279.2	-
Total capital projects				\$ 34,620.2	\$ 28,985.5
<b>Advisory Projects Post-2011</b>					
Condition based monitoring		1,000.0	-	-	-
Dike upgrades		3,690.0	-	-	-
Headquarters/PP parking lot paving		1,000.0	-	-	-
LMS replacement		250.0	-	-	-
Mobile radio system replacement		7,432.0	-	-	-
Motor rewind		3,690.0	-	-	-
Pumping plant closed-loop cooling system		10,000.0	-	-	-
Transformer rewind/refurbishment		7,739.0	-	-	-
Transmission line projects		34,634.0	-	-	-
Transmission separation		1,150.0	-	-	-
Turnouts-Electronic gear drive upgrade		3,927.7	-	-	-
VoIP		232.7	168.7	-	-
Total advisory capital projects				\$ -	\$ -
<b>Total capital improvement plan</b>				<b>\$ 34,620.2</b>	<b>\$ 28,985.5</b>
<b>Capital equipment</b>				<b>\$ 2,980.3</b>	<b>\$ 1,278.9</b>
<b>Total capital budget</b>				<b>\$ 37,600.5</b>	<b>\$ 30,264.4</b>

Note: Capital equipment purchased and capital projects completed prior to 2010 are not shown.

# Capital Budget - Detail

(In Thousands)

	2012	2013	2014	2015	Balance
<b>Capital Improvement Program</b>					
As-built pumping plants phase 2	767.3	-	-	-	-
Breaker replacement (Mark Wilmer PP)	-	-	-	-	-
Business continuous update	-	-	-	-	-
Chillers	2,416.5	1,400.5	-	-	-
Communication cable replacement	7,430.8	13,990.8	-	-	-
Database (Resource, Planning & Analysis)	-	-	-	-	-
Effluent Pipeline (Lower Santa Cruz)	3,930.7	451.9	-	-	-
Enterprise financial planning	-	-	-	-	-
ERP hardware upgrade	-	-	-	-	-
Geomation replacement	-	-	-	-	-
GIS underground utilities	-	-	-	-	-
Potable water to the pumping plants	-	-	-	-	-
Power meters (Brady, Picacho, Red Rock)	-	-	-	-	-
Projects under \$200,000	-	-	-	-	-
Pumping plant fire protection	4,326.5	-	-	-	-
Recharge improvement (Pima Mine Road)	626.4	-	-	-	-
Remote terminal units (RTU)	-	-	-	-	-
SCADA replacement	-	-	-	-	-
Southwest transmission	-	-	-	-	-
Superstition Mountains Recharge Project	-	-	-	-	-
Trashrakes	2,222.0	3,823.0	-	-	-
Urban fencing - Phase I	-	-	-	-	-
Urban fencing - Phase II	-	-	-	-	-
Water treatment (Salt Gila Pumping Plant)	-	-	-	-	-
Weld paint shop modification	-	-	-	-	-
Wide area network (Checks & Turnouts)	-	-	-	-	-
Total capital projects	\$ 21,720.2	\$ 19,666.2	\$ -	\$ -	\$ -
<b>Advisory Projects Post-2011</b>					
Condition based monitoring	250.0	250.0	250.0	250.0	-
Dike upgrades	-	-	3,690.0	-	-
Headquarters/PP parking lot paving	-	500.0	500.0	-	-
LMS replacement	250.0	-	-	-	-
Mobile radio system replacement	-	-	2,144.0	5,288.0	-
Motor rewind	-	-	-	3,690.0	-
Pumping plant closed-loop cooling system	4,000.0	2,000.0	2,000.0	2,000.0	-
Transformer rewind/refurbishment	2,948.0	2,674.0	-	2,117.0	-
Transmission line projects	-	-	18,204.0	16,430.0	-
Transmission separation	1,150.0	-	-	-	-
Turnouts-Electronic gear drive upgrade	945.0	965.0	994.0	1,023.8	-
VoIP	64.0	-	-	-	-
Total advisory capital projects	\$ 9,607.0	\$ 6,389.0	\$ 27,782.0	\$ 30,798.8	\$ -
<b>Total capital improvement plan</b>	\$ 31,327.2	\$ 26,055.2	\$ 27,782.0	\$ 30,798.8	\$ -
<b>Capital equipment</b>	\$ 1,611.0	\$ 1,665.5	\$ 2,223.4	\$ 2,382.7	\$ -
<b>Total capital budget</b>	\$ 32,938.2	\$ 27,720.7	\$ 30,005.3	\$ 33,181.5	\$ -



# Capital Budget - Detail

(In Thousands)

## Capital Equipment

### Replacements

	2010 Budget	2011 Budget	2012 Advisory	2013 Advisory	2014 Advisory	2015 Advisory
13.8 kv bushing	34.0	-				
Cat scraper (used)	-	400.0				
Coolers	210.0	-				
Cooling tower, building one		80.0				
Cushman carts (3)	-	45.0				
Diesel truck with crane	90.0					
Event recorder upgrade	70.0	70.0				
JLG 80' man lift	120.0	-				
MEGGER	122.0	-				
Milling machine	-	30.0				
Propane truck	98.0	-				
Servers - windows	90.0	80.0				
Shaft and rewind rotor	165.0	-				
Spare breaker - UZ1b - 52B	36.0	-				
System batteries, Sandario and Black Mtn	20.0	20.0				
Trimble radio equipment	71.0	-				
Vehicles (16 - 2010, 12 - 2011)	528.8	404.0	550.0	577.5	606.4	636.7
Walk-in refrigerator/freezer upgrade	60.0	-				
Weed spray truck	238.0	-				
Computer, servers, equipment, & software			416.0	424.0	933.0	1,042.0
Field, communication & office equipment			645.0	664.0	684.0	704.0
Other equipment (\$15,000 and less)	50.5	30.0				
<b>Total replacements</b>	<b>2,003.3</b>	<b>1,159.0</b>	<b>1,611.0</b>	<b>1,665.5</b>	<b>2,223.4</b>	<b>2,382.7</b>

## Capital Equipment

### Additions

Copier, reprographics	30.0	-				
Portable alarm systems	21.0	-				
Radio consoles	160.0	-				
Drop deck trailer	37.0	-				
Systems furniture	45.0	20.0				
Engineering lab equipment	23.0	-				
Training room, building one	30.0	-				
Security system	60.0	-				
Water jet equipment	410.0	-				
JLG man lift	25.0	-				
Diesel truck with crane	-	90.0				
Webcasting software	30.0	-				
Other equipment (\$15,000 and less)	106.0	9.9				
<b>Total additions</b>	<b>977.0</b>	<b>119.9</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Total capital equipment</b>	<b>2,980.3</b>	<b>1,278.9</b>	<b>1,611.0</b>	<b>1,665.5</b>	<b>2,223.4</b>	<b>2,382.7</b>

# As-Built Pumping Plants Phase 2

**STRATEGY:** Effectively Operate & Maintain the System  
**KEY RESULT AREA:** Project Reliability  
**PROJECT #:** 610160

**START DATE:** 1<sup>st</sup> Quarter 2003  
**COMPLETION DATE:** 2<sup>nd</sup> Quarter 2012  
**TOTAL PROJECT COST:** \$18,200,700

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 18,200.7	\$ 13,504.9	\$ 1,947.3	\$ 1,981.2	\$ 767.3	\$ -	\$ -	\$ -	\$ -

**DESCRIPTION:** Accurate and up-to-date as-built drawings are critical to achieve system reliability, safety and meet maintenance excellence objectives. The scope of this project will include a wire-by-wire verification to ensure that as-built drawings reflect what is installed. Final drawings will incorporate changes that will be used to troubleshoot and maintain the structures.

**JUSTIFICATION:** Good engineering and management practice mandates procedures and current as-built drawings to ensure that systems are operated and maintained in an efficient and consistent manner. Checks and turnouts (phase 2) and pumping plants (phase 2) will redefine the contents of a complete set of drawings to meet the needs of all District departments. These drawings will supersede previous drawings, convert all drawings to an electronic format, and index all drawings to the District's enterprise information management system (also known as LiveLink).

**OPERATING IMPACT:** There is no significant impact in the near future but it has the potential to save on maintenance and repair costs.

# Breaker Replacement Mark Wilmer Pumping Plant

**STRATEGY:** Effectively Operate & Maintain the System  
**KEY RESULT AREA:** Project Reliability  
**PROJECT #:** 610387

**START DATE:** 3<sup>rd</sup> Quarter 2010  
**COMPLETION DATE:** 4<sup>th</sup> Quarter 2010  
**TOTAL PROJECT COST:** \$ 240,000

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 240.0	\$ -	\$ 240.0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

**DESCRIPTION:** Overhaul the type DB air-blast unit breakers at Mark Wilmer. A field service engineer will be brought in to supervise the work.

**JUSTIFICATION:** The ABB type DB air-blast breakers have been in service since 1985. They are due for an overhaul based on time in service. Although the breakers are no longer manufactured, they are still supported by ABB. The cost of an overhaul is much less than replacing the breakers. Following this overhaul coupled with proper maintenance, these breakers should provide another twenty years service.

**OPERATING IMPACT:** The overhauls require a bus outage, which affects two units. The overhauls will be scheduled for our normal maintenance outage period (July – August).

# Business Continuous Update

STRATEGY: Effectively Operate & Maintain the System  
 KEY RESULT AREA: Project Reliability  
 PROJECT #: 610383

START DATE: 1<sup>st</sup> Quarter 2010  
 COMPLETION DATE: 4<sup>th</sup> Quarter 2011  
 TOTAL PROJECT COST: \$ 977,700

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 977.7	\$ -	\$ 975.8	\$ 1.9	\$ -	\$ -	\$ -	\$ -	\$ -

**DESCRIPTION:** It is anticipated that the end of support (EOS) date for the Enterprise Storage Server (ESS or Tier 1 storage) will occur prior to the end of the next budget cycle (2011). This storage server's main function is to support CAP critical applications and databases. A suitable replacement will be required within this timeframe. This project will increase our data storage capacity to support present and future projects.

**JUSTIFICATION:** Without upgrading the storage systems, the PSC will have to approve/disapprove some projects based on the amount of storage resources (Phoenix storage) required. With the Livelink Strategic Pathway initiative and the recent implementation of the ESRI GIS systems, as well as the inclusion of the Oracle ERP and Datastream systems into the BIA category of critical systems requiring 24/12 hour recovery time objective (RTO)/recovery point objective (RPO), CAP has outpaced available recovery system capabilities which will prevent CAP from meeting the RTO/RPO requirements of the BIA or protecting CAP data during an extended outage. CAP will be challenged with business continuity from the Tucson recovery site for any extended duration due to resource limitations. CAP estimated storage growth 25%-40%. Outside company predictions are 40%-60%.

**OPERATING IMPACT:** The maintenance contract for the storage systems, electronic vaulting, and additional 24x7x365 services will be \$127,000 per year.



# Chillers

STRATEGY: Effectively Operate & Maintain the System  
 KEY RESULT AREA: Project Reliability  
 PROJECT #: 610334/610335/610355

START DATE: Various  
 COMPLETION DATE: 4<sup>th</sup> Quarter 2013  
 TOTAL PROJECT COST: \$ 12,997,200

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 12,997.2	\$ 2,913.7	\$ 3,755.8	\$ 2,510.7	\$ 2,416.5	\$ 1,400.5	\$ -	\$ -	\$ -

**DESCRIPTION:** New chillers or air conditioning will be installed at all of the pumping plants. Previously, chillers for CAWCD's headquarters (Building One) and air conditioning for the Twin Peaks and Sandario Pumping Plants were purchased and capitalized. In 2006 and 2007, chillers were replaced at Headquarters Building Two and at the Mark Wilmer Pumping Plant. Between 2008 through 2013, the remaining pumping plants are scheduled for chiller replacement.

**JUSTIFICATION:** The pumping plant cooling systems are approaching the end of their 20-year life. In addition, chillers installed in our pumping plants use R-22 equipment. The EPA is mandating a phase-out of R-22 refrigerant and equipment beginning in 2010. Manufacturers will cease to build R-22 equipment (and parts) in January 2010.

	Total	Pre-2010	2010	2011	2012	2013	2014
Brady/Picacho/Red Rock	2,424.8	2,424.8	-	-			-
Bouse/Little Harq & Hassayampa/Salt Gila	-						
Brawley/San Xavier	6,509.6	488.9	3,755.8	2,264.9	-	-	-
Waddell	3,262.8	-	-	245.8	2,416.5	600.5	-
	800.0	-	-	-	-	800.0	-
	<u>\$12,997.2</u>	<u>\$ 2,913.7</u>	<u>\$3,755.8</u>	<u>\$2,510.7</u>	<u>\$ 2,416.5</u>	<u>\$1,400.5</u>	<u>\$ -</u>

**OPERATING IMPACT:** There is no significant impact, but has the potential for energy cost and maintenance savings in the future.

# Communication Cable Replacement

STRATEGY: Effectively Operate & Maintain the System  
 KEY RESULT AREA: Project Reliability  
 PROJECT #: 610170/610171/610357

START DATE: 2<sup>nd</sup> Quarter 2009  
 COMPLETION DATE: 4<sup>th</sup> Quarter 2013  
 TOTAL PROJECT COST: \$33,871,000

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 33,871.0	\$ 3,129.3	\$ 4,786.6	\$ 4,533.5	\$ 7,430.8	\$ 13,990.8	\$ -	\$ -	\$ -

**DESCRIPTION:** This project consists of installing fiber optic (FO) cable in conduit along the CAP's right-of-way and will span from the Bouse Hills Pumping Plant to the Terminus. The new FO cable will replace a deteriorating system that supports data and voice communications. The FO communication system shall be designed and constructed to allow the complete installation of the system and termination at all of the required locations. Four projects (called phases) will install the new FO communication system, running from the Bouse Hills Pumping Plant to the Terminus.

**JUSTIFICATION:** Poor performance of the existing communication system and the operational requirement for new communication cable led to the proposed Bouse Hills Pumping Plant to Terminus FO project. The existing communication cable system has degraded over the years from age and numerous cable cuts (new utility and bridge crossings along our canal necessitate the need to cut and re-route our cables, each time adding more signal attenuation). The existing metallic cable communication system has a much slower data throughput speed than FO. Replacing the metallic cable with FO prepares us for future growth, higher bandwidth capacity, and improvements to existing technology.

	Total	Pre-2010	2010	2011	2012	2013	2014
Phase I	\$ 6,410.0	\$ 2,659.4	\$ 3,736.6	\$ 14.0	\$ -	\$ -	\$ -
Phase II	4,727.7	454.1	580.9	3,692.7	-	-	-
Phase III	10,433.3	15.8	469.1	826.8	6,330.8	2,790.8	-
Phase IV	12,300.0	-	-	-	1,100.0	11,200.0	-
	\$ 33,871.0	\$ 3,129.3	\$ 4,786.6	\$ 4,533.5	\$ 7,430.8	\$ 13,990.8	\$ -

**OPERATING IMPACT:** The maintenance of the new FO system is anticipated to be lower than our aging metallic cable system.

# Database – Resource, Planning & Analysis

**STRATEGY:** Effectively Operate & Maintain the System  
**KEY RESULT AREA:** Project Reliability  
**PROJECT #:** 610176

**START DATE:** 3<sup>rd</sup> Quarter 2010  
**COMPLETION DATE:** 4<sup>th</sup> Quarter 2011  
**TOTAL PROJECT COST:** \$ 140,000

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 140.0	\$ -	\$ 70.0	\$ 70.0	\$ -	\$ -	\$ -	\$ -	\$ -

**DESCRIPTION:** Data management system needed to provide the foundational data the Resource Planning and Analysis (RP&A) department needs to conduct critical planning for CAP and CAGRD. This data system will assist in supporting policy decisions brought before CAP's Board of Directors.

**JUSTIFICATION:** The RP&A Database would, in particular, support supply and demand forecasting as well as other critical data needed to support Integrated Resource Planning and specific policy projects like ADD Water Implementation, Recovery Planning, On-River Demand Forecasting, CAGRD Plan of Operation, groundwater studies, AWBA functions and specialized requests from ADWR and others.

**OPERATING IMPACT:** No significant impact.

# Effluent Pipeline – Lower Santa Cruz

STRATEGY: Develop New Water Supplies  
 KEY RESULT AREA: Water Supply  
 PROJECT #: 610379

START DATE: 2<sup>nd</sup> Quarter 2009  
 COMPLETION DATE: 4<sup>th</sup> Quarter 2013  
 TOTAL PROJECT COST: \$ 5,614,800

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 5,614.8	\$ 20.6	\$ 151.4	\$ 1,060.2	\$ 3,930.7	\$ 451.9	\$ -	\$ -	\$ -

**DESCRIPTION:** This project will construct an in-channel diversion structure and delivery pipeline to convey between 10,000 and 20,000 A/F per year of effluent from the Santa Cruz River to the Lower Santa Cruz Recharge Project (LSCR) basins.

**JUSTIFICATION:** The Plan of Operation for the CAGR, adopted in 2005, calls for the CAGR to acquire other types of renewable water supplies, including nearly 40,000 A/F per year of effluent beginning as early as 2008. The Lower Santa Cruz Effluent Recharge Project would provide the means for CAGR to acquire rights to a supply of effluent and provide the facility to replenish it. Effluent stored at the facility could be used to meet a portion of CAGR's Tucson AMA replenishment obligations and accrue storage credits to meet the Tucson AMA replenishment reserve target.

**OPERATING IMPACT:** Operation and maintenance of the project for the first full year is projected to be \$152,500. Entities entering into effluent agreements for storage at this site could potential reimburse CAGR for the construction costs, which will be initially funded from the CAGR water rights and infrastructure funds.



# Enterprise Financial Planning

STRATEGY: Effectively Operate & Maintain the System  
 KEY RESULT AREA: Project Reliability  
 PROJECT #: 610384

START DATE: 3<sup>rd</sup> Quarter 2010  
 COMPLETION DATE: 3<sup>rd</sup> Quarter 2011  
 TOTAL PROJECT COST: \$ 550,000

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 550.0	\$ -	\$ 390.0	\$ 160.0	\$ -	\$ -	\$ -	\$ -	\$ -

**DESCRIPTION:** The Enterprise Financial Planning (EFP) Project will replace our current budgeting software (SRC) and increase integration within our existing ERP software. This project will provide a platform to develop an EFP system that will not only enable CAP to integrate key Oracle and Infor (Datastream) information as well as relevant siloed data, the EFP software can also allow CAP to centralize and integrate our budgeting, quarterly financial review, balance scorecarding, business planning, cash management, position control, and long range planning processes. Furthermore, the EFP software will provide enhanced communication through dash boarding, drillable reporting and workflow.

**JUSTIFICATION:** As a consequence of SAP's decision to stop supporting SRC as of December 2010, CAP will need to decide whether to support SRC beyond CY 2010 ourselves, or implement budgeting software that can replace the bare SRC functionality (e.g., budgeting and limited reporting capabilities), or implement a more robust planning and forecasting software that would allow CAP to not only develop budgets and complete variance reports, but also enable us to create assumption driven models for budgeting and forecasting, centralize the data for scorecarding and long-range planning, including rate setting models and applications, and produce publishing quality graphics.

**OPERATING IMPACT:** All levels of CAP management are impacted as well as many finance personnel. EFP will integrate, speed up and improve the quality of our current and budgeting processes. The EFP will also have better reporting capabilities for better end-user decision making and provide more timely results. In addition, the flow of the information will be significantly changed by using a software that is integrated with the current Oracle and Infor databases. This project also supports CAP's "green" effort by not distributing paper copies.

# ERP Hardware Upgrade

**STRATEGY:** Effectively Operate & Maintain the System  
**KEY RESULT AREA:** Project Reliability  
**PROJECT #:** 610385

**START DATE:** 1<sup>st</sup> Quarter 2010  
**COMPLETION DATE:** 3<sup>rd</sup> Quarter 2010  
**TOTAL PROJECT COST:** \$ 840,000

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 840.0	\$ -	\$ 840.0	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

**DESCRIPTION:** It is anticipated that the end of support (EOS) date for the current AIX P5 servers that support Oracle, Infor, and Livelink systems will occur prior to the end of the next budget cycle (2011). This project will replace the current AIX server infrastructure with a system that is supported with capacity on demand to allow for future growth. This project will increase our server system capacity to support present and future projects.

**JUSTIFICATION:** CAP's current P5 Series ERP hardware and operating system infrastructure does not incorporate robust virtualization (do more with less) capabilities. Advancements within the P6 architecture and AIX v6 would provide an ERP environment that would allow for more flexibility and mobility with ERP resources for hardware management, operating system and business continuity, and disaster recovery improvements.

**OPERATING IMPACT:** The maintenance contract for the P6 servers including additional 24x7x365 services will be \$31,000 per year.

# Geomation Replacement

STRATEGY: Effectively Operate & Maintain the System  
 KEY RESULT AREA: Project Reliability  
 PROJECT #: 610190

START DATE: 2<sup>nd</sup> Quarter 2009  
 COMPLETION DATE: 4<sup>th</sup> Quarter 2010  
 TOTAL PROJECT COST: \$ 549,200

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 549.2	\$ 150.1	\$ 399.1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

**DESCRIPTION:** The scope of this project consists of replacing Geomation systems at the following locations: Hieroglyphics Mountain Recharge Control Building, Agua Fria Recharge, Avra Valley Recharge, Lower Santa Cruz Pumps, Lower Santa Cruz Basins, CAVSARP Turnout, and Pima Mine Road. This project will remove Geomation units not replaced under the RTU Replacement Project, and install in their place either a PLC or a Remote Input/Output system. Geomation replacement at the above mentioned locations, in concert with the RTU Replacement Project, would provide a phase-out of Geomation technology at CAP.

**JUSTIFICATION:** Geomation technology is obsolete, as the manufacturer no longer provides spare parts, and on-going repair of Geomation units comes only by cannibalizing existing equipment. In addition, CAP has begun to standardize the way it monitors and automates operations requiring the use of newer, more robust technology found in PLCs and Remote Input/Output systems.

**OPERATING IMPACT:** The new system will be more reliable and align with our standardization effort.

# Geographical Information System (GIS) Underground Utilities

STRATEGY: Provide a Healthy, Safe & Secure Workplace  
 KEY RESULT AREA: Project Reliability  
 PROJECT #: 610304

START DATE: 2<sup>nd</sup> Quarter 2005  
 COMPLETION DATE: 2<sup>nd</sup> Quarter 2010  
 TOTAL PROJECT COST: \$ 634,900

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 634.9	\$ 630.3	\$ 4.6	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

### DESCRIPTION:

The scope of this project is to research, organize and document the utilities that are both owned by and that affect the CAP. Previously, the amount of documentation that represents the CAP utilities was unmanageable and incomplete. For six miles of canal, there are approximately 45 different documents that reference utility information. The goal of this project is to identify and capture the source information on a single set of drawings to increase the accuracy and improve the management of CAP's utilities. The first step is to create a set of base drawings for the entire canal and pumping plants then add all the consolidated utility information to the drawings. The drawings are then reviewed by multiple departments and additional corrections are made. Then the drawings are indexed into Livelink as "derived from existing records" and the utilities are published in the GIS.

### JUSTIFICATION:

This effort will streamline an inefficient, cumbersome and time-consuming process. It will provide a vehicle to facilitate capturing new, modified, and existing documentation. It will bring the best, and most current, utility and lands information into a manageable system. This will improve safety in the field and responsiveness to utility and lands information requests.

The major benefit of this option is the significant improvement in excavation safety. In addition, there is also a reduced risk of damaging buried utilities which lowers repair costs and improves system reliability. There will also be a labor savings of approximately three and a half hours per dig permit. The baseline drawings will provide a method to easily capture future utility changes and prevent a reoccurrence of this problem.

OPERATING IMPACT: No significant impact.



# Potable Water to the Pumping Plants

STRATEGY: Effectively Operate & Maintain the System  
KEY RESULT AREA: Project Reliability  
PROJECT #: 610363

START DATE: 4<sup>th</sup> Quarter 2007  
COMPLETION DATE: 1<sup>st</sup> Quarter 2010  
TOTAL PROJECT COST: \$ 5,822,600

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 5,822.6	\$ 2,395.8	\$ 2,499.4	\$ 927.4	\$ -	\$ -	\$ -	\$ -	\$ -

**DESCRIPTION:** This project is to provide potable water to all pumping plants that currently do not have it available (11 of the 15 plants). The project will provide for an on-site water treatment system for eight pumping plants and connect the other three to local public water systems.

**JUSTIFICATION:** To comply with state and federal Occupational Safety and Health (OSHA) requirements, CAP needs to provide potable water at each pumping plant. This is also a requirement of the Voluntary Protection Program (VPP) status CAP has with the Arizona state branch of OSHA.

**OPERATING IMPACT:** No significant impact.

# Power Meters – Brady, Picacho, Red Rock

**STRATEGY:** Effectively Manage Power Resources  
**KEY RESULT AREA:** Electrical Power  
**PROJECT #:** 610381

**START DATE:** 2<sup>nd</sup> Quarter 2009  
**COMPLETION DATE:** 3<sup>rd</sup> Quarter 2011  
**TOTAL PROJECT COST:** \$ 1,933,200

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 1,933.2	\$ 24.1	\$ 442.0	\$ 1,467.1	\$ -	\$ -	\$ -	\$ -	\$ -

**DESCRIPTION:** Replace the existing metering system in the switchyards for Brady, Picacho, and Red Rock Pumping Plants with "revenue grade" power meters to enable accurate measurement of the power utilized by the plants and reduce the overcharging of line losses to CAP.

**JUSTIFICATION:** Saguaro-ED-2 is the 115 kV transmission line between the Arizona Public Service Company (APS) Saguaro switchyard and the ED-2 switchyard that provides power to the Red Rock, Picacho, and Brady Pumping Plants. Revenue grade meters are installed at the Saguaro switchyard end of the transmission line and the ED-2 switchyard end. In recent years, the Saguaro-ED-2 transmission line has been operated with both ends closed to accommodate the increased demand for power by the addition of new APS customers "downstream" of the CAP pumping plants. As a result of the present metering configuration, CAP is paying for all of APS's line losses for the Saguaro-ED-2 transmission line for the customers beyond this line. It is estimated that this overcharge of line losses to CAP equates to approximately \$20,000 in overbilling per month.

**OPERATING IMPACT:** No significant impact.

# Pumping Plant Fire Protection

STRATEGY: Provide a Healthy, Safe, and Secure Workplace    START DATE: 2<sup>nd</sup> Quarter 1999  
 KEY RESULT AREA: Project Reliability    COMPLETION DATE: 4<sup>th</sup> Quarter 2012  
 PROJECT #: 610124    TOTAL PROJECT COST: \$11,641,383

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 11,641.4	\$ 4,757.7	\$ -	\$ 2,557.2	\$ 4,326.5	\$ -	\$ -	\$ -	\$ -

**DESCRIPTION:** Upgrade the fire protection systems at Bouse Hills, Little Harquahala, Hassayampa, and Salt-Gila Pumping Plants. These upgrades include standardizing detection and suppression systems; modifying stairways to ensure safe exit pathways from the plants; installing suppression systems in control rooms, cable galleries and over the pressurized oil reservoirs; and installing detection systems over high-voltage switch-gear.

**JUSTIFICATION:** Construction of the District's 15 pumping plants spanned more than a decade. During the course of construction, the Bureau of Reclamation's (USBR) fire protection designs changed dramatically beginning from the western plants and continuing to the southern plants. All systems need to be brought into compliance with the current National Fire Protection Association standards.

**OPERATING IMPACT:** Maintaining the fire protection systems at pumping plants and headquarters requires additional staff, materials, and maintenance contracts at an annual cost of about \$501,000 (excluding any impact on overhead). Prior to the upgrade, fire protection costs were about \$47,600 (2005) per year using personnel from Safety, Facilities Maintenance, Pumping Plants, Maintenance Departments, and an outside contractor. However, this does not provide adequate safety practices. Four employees (three specialist mechanics plus one supervisor) are dedicated to fire protection at the pumping plants and headquarters.

# Recharge Improvement - Pima Mine Road

STRATEGY: Develop New Water Supplies  
 KEY RESULT AREA: Water Supply  
 PROJECT #: 610382

START DATE: 2<sup>nd</sup> Quarter 2009  
 COMPLETION DATE: 1<sup>st</sup> Quarter 2012  
 TOTAL PROJECT COST: \$ 3,355,000

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 3,355.0	\$ 9.9	\$ 491.3	\$ 2,227.4	\$ 626.4	\$ -	\$ -	\$ -	\$ -

**DESCRIPTION:** This project addresses operational issues at the Pima Mine Road Recharge Project (Pilot and Expansion). Issues addressed include: declining infiltration rates, cavitations of control valves, relocation of basin water level floatwells, clogging of pressure reduction valves, lack of data telemetry, and project operation automation.

**JUSTIFICATION:** Facility design constraints and maintenance issues currently restrict recharge volumes to approximately 75% of permitted capacity. The project is operationally controlled by manually operating basin control valves on site. This is a labor intensive effort, as the site is remotely located.

**OPERATING IMPACT:** Annual maintenance and operational savings of approximately \$300,000. It is anticipated that Tucson Water will reimburse CAP for half of the cost for this project, in that Tucson Water is a 50% co-owner of the recharge facility.



# Remote Terminal Units

STRATEGY: Effectively Operate & Maintain the System  
 KEY RESULT AREA: Project Reliability  
 PROJECT #: 610262

START DATE: 1<sup>st</sup> Quarter 2004  
 COMPLETION DATE: 3<sup>rd</sup> Quarter 2010  
 TOTAL PROJECT COST: \$ 9,174,600

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 9,174.6	\$ 7,466.2	\$ 1,708.4	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

**DESCRIPTION:** This project will replace the Johnson Controls JC5000 Remote Terminal Units (RTU) with Programmable Logic Controllers (PLC) of the latest technology. As the RTU units are replaced, CAWCD will: 1) add communication to the flow meters at the plants and turnouts; 2) add Ethernet modules to the adjustable frequency drives at check structures; and 3) replace the alternating current power source with direct current power fed from rectifiers and battery banks. The direct current (DC) power feed will also supply the communication cabinets, gate control meters, and flow meters.

**JUSTIFICATION:** The JC5000 RTUs were older technology at the time of installation and are now obsolete, no longer manufactured or supported, and deteriorating. Spare parts for critical components such as processor cards, analog cards, and specialized modems are in low supply or completely unavailable. Maintenance is also moving towards a Condition-Based Monitoring philosophy and the new PLCs are critical to this program. Design changes within this project would solve other problems involving high man-hours for maintenance and unnecessary exposure to high voltage.

**OPERATING IMPACT:** No significant impact.

# Supervisory Control and Data Acquisition (SCADA) System Replacement

**STRATEGY:** Effectively Operate & Maintain the System  
**KEY RESULT AREA:** Project Reliability  
**PROJECT #:** 610365

**START DATE:** 1<sup>st</sup> Quarter 2009  
**COMPLETION DATE:** 3<sup>rd</sup> Quarter 2011  
**TOTAL PROJECT COST:** \$ 3,680,700

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 3,680.7	\$ 61.4	\$ 1,934.3	\$ 1,685.0	\$ -	\$ -	\$ -	\$ -	\$ -

**DESCRIPTION:** The current Supervisory Control (SCADA) Master Station computers, plus the Waddell Sub-Master computers, will be replaced with a new system based on current technology. CAP's SCADA system uses redundant servers and workstations to link all CAP components throughout the canal. SCADA allows water system operators real-time access to data from checkgates and turnouts leading to customer distribution channels. SCADA also gives the water system operators remote control over the field equipment from headquarters.

**JUSTIFICATION:** The existing SCADA Master Station was installed in 1998. Although still very reliable, the system is approaching end-of-life. Design and specification work are scheduled for 2009, awarding the contract and building the system in 2010 and then installing the new system in 2011.

**OPERATING IMPACT:** The SCADA system is critically important to the safe operation of the CAP. Replacing the aging computers will help us operate the CAP reliably into the future.

# Southwest Transmission

STRATEGY: Effectively Manage Power Resources  
 KEY RESULT AREA: Electrical Power  
 PROJECT #: 610296

START DATE: 2<sup>nd</sup> Quarter 2009  
 COMPLETION DATE: 1<sup>st</sup> Quarter 2011  
 TOTAL PROJECT COST: \$ 9,420,800

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 9,420.8	\$ 2,006.7	\$ 7,034.8	\$ 379.3	\$ -	\$ -	\$ -	\$ -	\$ -

**DESCRIPTION:** This interconnection transmission project began with a request from Southwest Transmission Co-Operative (SW) requesting interconnection between CAP and SW transmission systems at four points and use of unused transmission capacity in CAP's line from Rattlesnake past the Black Mountain Pumping Plant (BMPP). This project has three phases: (1) a line-to-line interconnection south of BMPP with SW's Valencia Substation, (2) a loop-in to CAP transmission line near Brawley Pumping Plant with SW's existing Sandario Substation and a new SW substation on the CAP transmission line between Brawley and San Xavier Pumping Plants, and (3) a new 115,000 volt line to be built, operated and maintained by SW.

**JUSTIFICATION:** This project is principally a reliability project. The interconnection will cancel the need to move energy over Western's Parker Davis system and the Tucson pumping plants will be looped-in with SW's system and will no longer be radial to the power grid. The commercial implications include allowance for total displacement, meaning transmission services are not required to transfer CAP energy directly to SW. Rather, CAP will deliver pumping energy to SW at Westwing or Davis for subsequent transportation to SW's other loads. This displacement also includes CAP's Pinal County pumping plants.

**OPERATING IMPACT:** Benefits are derived from sharing operation and maintenance costs of CAP transmission with SW and avoiding transmission expense through physical displacement of electricity with SW. The benefits to CAWCD will be approximately \$700,000 per year starting in 2012.

# Superstition Mountains Recharge Project

STRATEGY: Develop New Water Supplies  
 KEY RESULT AREA: Water Supply  
 PROJECT #: 610315

START DATE: 2<sup>nd</sup> Quarter 2002  
 COMPLETION DATE: 4<sup>th</sup> Quarter 2011  
 TOTAL PROJECT COST: \$11,932,000

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 11,932.0	\$ 2,856.9	\$ 3,559.4	\$ 5,515.7	\$ -	\$ -	\$ -	\$ -	\$ -

### DESCRIPTION:

The Superstition Mountains Recharge Project (SMRP) is permitted to recharge 25,000 acre-feet annually and is located within the Phoenix AMA. This project is sited on the banks of Queen Creek upstream of Sonoqui Dike in northeast Pinal County. SMRP consists of spreading basins that will percolate water into the aquifer and a pump station that lifts water over Sonoqui Dike for delivery to the basins. This project is sited on approximately 104.5 acres within the CAP right-of-way and will not require land acquisition. The \$11,932,000 total project cost includes \$1,692,200 of State Demonstrate Funds, which were spent prior to 2006.

Potentially, there could be two follow-on projects (Phases II & III). These phases would be treated as unique projects and require separate approval post-2011 completion of the initial project. The second and third phases are sited on State Land (139 acres and 113 acres respectively) and approval to construct on those lands will be needed before proceeding with additional phases.

### JUSTIFICATION:

Currently, there is a lack of sufficient recharge capacity to meet the storage demands for east valley growth. SMRP will benefit groundwater management in the East Salt River Valley. The project will also support the Central Arizona Groundwater Replenishment District (CAGRDR) replenishment needs in the East Phoenix AMA.

For comparison, SMRP \$477 cost per acre-foot of annual capacity is shown below relative to other CAP recharge projects:

Lower Santa Cruz	\$103/AF	Pima Mine Road	\$363/AF
Avra Valley	\$125/AF	Hieroglyphic Mountains	\$184/AF
Tonopah Desert	\$140/AF	Agua Fria	\$301/AF

### OPERATING IMPACT:

The operating expenses in the first year (2011) are expected to be \$75,500. The recharge site is expected to start operations in July, 2011.



# Trashrakes

**STRATEGY:** Effectively Operate & Maintain the System  
**KEY RESULT AREA:** Project Reliability  
**PROJECT #:** 610162/610319/610338

**START DATE:** 1<sup>st</sup> Quarter 2005  
**COMPLETION DATE:** 4<sup>th</sup> Quarter 2013  
**TOTAL PROJECT COST:** \$14,401,600

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 14,401.6	\$ 4,217.5	\$ 1,704.7	\$ 2,434.4	\$ 2,222.0	\$ 3,823.0	\$ -	\$ -	\$ -

### DESCRIPTION:

As the pilot project, Hassayampa Pumping Plant will replace their existing trashrake system with a monorail trashrake cleaning system. After completion, it would be followed by the replacement of the trashrake systems at Bouse Hills, Little Harquahala, and Salt Gila Pumping Plants. The new monorail system features a down-stroking gripper attached to a trolley riding on an overhead monorail. The monorail trashrake design is simplistic with 60 moving parts compared to the existing trashrakes with 330 moving parts. This design allows for greatly simplified repair management. Research indicates a monorail system can be expected to have significantly higher waste removal efficiency than existing rakes. The Tonopah Desert Recharge Project trashrake is a different design from the pumping plant trashrakes and is being constructed to address weed clogging problems at the Tonopah Desert Recharge Project turnout.

	Total	Pre-2010	2010	2011	2012	2013	2014
Hassayampa	\$ 3,092.3	\$ 3,092.3	\$ -	\$ -	\$ -	\$ -	\$ -
Bouse/							
Little Harquahala	5,985.7	298.9	1,030.4	2,434.4	2,222.0	-	-
Salt Gila	3,823.0				-	3,823.0	-
Tonopah	1,500.6	826.3	674.3	-	-	-	-
	\$ 14,401.6	\$ 4,217.5	\$ 1,704.7	\$ 2,434.4	\$ 2,222.0	\$ 3,823.0	\$ -

### JUSTIFICATION:

Work has been underway for over five years replacing corroded and damaged guide rails for many of the trashrakes at Bouse Hills, Little Harquahala, Hassayampa, and Salt Gila Pumping Plants. It was discovered that the studs holding the guide rails in place also needed to be replaced. The root cause of the guide rail failure is that the rail alignments, in most of the 40 trashrakes, did not meet the original design restraint of + 1/8" on a 15 or 19 foot span (trash rake width). This installation practice resulted in the premature destruction of the guide rails. The corrosion is also accelerated because the guide rails are partially submerged. With these added complications and cost, it was determined to be more cost effective and a better technical solution to replace the trashrakes with a new system.

**OPERATING IMPACT:** No significant impact.

# Urban Fencing – Phase I

**STRATEGY:** Effectively Maintain & Operate the System  
**KEY RESULT AREA:** Project Reliability  
**PROJECT #:** 610356

**START DATE:** 3<sup>rd</sup> Quarter 2008  
**COMPLETION DATE:** 3<sup>rd</sup> Quarter 2010  
**TOTAL PROJECT COST:** \$ 882,300

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 882.3	\$ 382.1	\$ 500.2	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

**DESCRIPTION:** This project consists of building approximately 100,000-feet of four-strand barbed-wire fence to protect and define CAP's property and the green-up areas. This phase extends from approximately Akin Lane Bridge (milepost 121.6) to milepost 140.5.

**JUSTIFICATION:** It is in CAP's best interest to pursue fencing CAP's green-up area in a planned manner to address security, dumping, and potential vandalism issues.

**OPERATING IMPACT:** No significant impact.

## Urban Fencing – Phase II

**STRATEGY:** Effectively Operate & Maintain the System  
**KEY RESULT AREA:** Project Reliability  
**PROJECT #:** 610374

**START DATE:** 3<sup>rd</sup> Quarter 2009  
**COMPLETION DATE:** 4<sup>th</sup> Quarter 2011  
**TOTAL PROJECT COST:** \$ 592,200

### PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 592.2	\$ 208.5	\$ 194.8	\$ 188.9	\$ -	\$ -	\$ -	\$ -	\$ -

**DESCRIPTION:** This project consists of building approximately 46,500-feet of four-strand barbed-wire fence to protect and define CAP's property and the green-up areas. This phase extends from approximately milepost 221.4 to milepost 221.2.

**JUSTIFICATION:** It is in CAP's best interest to pursue fencing CAP's green-up area in a planned manner to address security, dumping, and potential vandalism issues.

**OPERATING IMPACT:** No significant impact.

# Water Treatment - Salt Gila Pumping Plant

STRATEGY: Effectively Operate & Maintain the System      START DATE: 4<sup>th</sup> Quarter 2009  
 KEY RESULT AREA: Project Reliability      COMPLETION DATE: 4<sup>th</sup> Quarter 2011  
 PROJECT #: 610378      TOTAL PROJECT COST: \$ 1,168,200

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 1,168.2	\$ 176.3	\$ 206.3	\$ 785.6	\$ -	\$ -	\$ -	\$ -	\$ -

**DESCRIPTION:** The intent of this project is to upgrade the plant's service water system. A reliable source of stuffing box water, bearing cooling water, and motor cooling water for each pump unit is required for main unit pump operation. The existing treatment and distribution systems have reliability concerns that require improvements. In addition, much of the equipment has reached the end of its service life or has been abandoned in place. This project provides a comprehensive approach to resolving design issues associated with the stuffing box water system at the Salt Gila Pumping Plant.

**JUSTIFICATION:** A new system will increase the reliability of the plant and reduce plant callouts associated with the raw water treatment system. Issues with the service water system have caused main pumping units to shut down.

**OPERATING IMPACT:** During construction, a temporary source of water will need to be provided to the main pump units to keep them operational; without a water source, the main units will be inoperable.



# Weld Paint Shop Modification

STRATEGY: Effectively Operate & Maintain the System  
 KEY RESULT AREA: Project Reliability  
 PROJECT #: 610358

START DATE: 2<sup>nd</sup> Quarter 2007  
 COMPLETION DATE: 1<sup>st</sup> Quarter 2010  
 TOTAL PROJECT COST: \$ 567,100

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 567.1	\$ 562.3	\$ 4.8	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

### DESCRIPTION:

This design-bid-build project consists of providing a complete tenant improvement to the existing weld and paint shops located at the north quadrant of Building #2. It is intended that the existing Weld Shop will be converted into administrative and light-duty work space, and the existing Paint Shop will be converted into storage space for Fleet Maintenance. New improvements to be made include: office and crew space, lighting, HVAC, fire protection, storage capacity, paint, and flooring. Also, existing ventilation components will be demolished and the paint booth and crane will be disposed.

### JUSTIFICATION:

Upon completion of the Maintenance Building Addition Project, CAP's welding and paint shops will transition over to the completed facility. Currently, the welding and paint shops are located at the northern end of Building #2. Once these spaces are vacated, they will be renovated to provide a satisfactory work environment for Fleet Maintenance and CTS Modifications personnel and allow CAP to benefit from continued occupancy. On April 20, 2007, the PRC approved the Project Concept Document which mentions that, based upon a "Needs Analysis" completed in 2002, additional shop and storage space was required at CAP Project Headquarters for the CTS Modifications crew. The existing, vacated Welding Shop will provide the additional space needed, and the Paint Shop will act as additional tool room for Fleet Maintenance. A waiver document was submitted to the PRC for the assessment document based on the lack of alternatives and the previously agreed upon need to occupy the space as defined. Since it has been determined that the spaces will be occupied, the area must be improved sufficiently to provide a professional work environment and conditions to meet the needs of the departments that will be utilizing the spaces.

### OPERATING IMPACT:

There is no significant impact.

# Wide Area Network – Checks and Turnouts

**STRATEGY:** Effectively Operate & Maintain the System  
**KEY RESULT AREA:** Project Reliability  
**PROJECT #:** 610165

**START DATE:** 1<sup>st</sup> Quarter 2008  
**COMPLETION DATE:** 4<sup>th</sup> Quarter 2010  
**TOTAL PROJECT COST:** \$ 961,700

## PROJECT SCHEDULE / COST ESTIMATE (IN \$000s):

Total	Pre-2010	2010	2011	2012	2013	2014	2015	Balance
\$ 961.7	\$ 682.5	\$ 279.2	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

**DESCRIPTION:** This project replaces the Wide Area Network (WAN) at the Checks and Turnouts. WAN is a computer network that covers a broad area (i.e., any network whose communications links cross metropolitan, regional, or national boundaries) or, less formally, a network that uses routers and public communications links.

**JUSTIFICATION:** Since this system was installed in phases, some of the equipment has reached what the manufacturer considers end of life. This means that it will no longer be supported. It is recommended to upgrade the WAN with a solution similar to the CISCO solution. The upgrade will be implemented in a phased-in approach, which would allow CAP to receive the most benefit from the current equipment by using the equipment up to the end of life (five years).

**OPERATING IMPACT:** The maintenance contract for WAN equipment will be \$150,000 per year starting in 2009 due to free first year maintenance from CISCO.

